

AMENDMENTS

LISTING OF CLAIMS:

1. (Currently amended) A voltage generator comprising:
 - a detector for comparing an output voltage of the voltage generator with a first reference voltage to output a first sensing signal and comparing the output voltage of the voltage generator with a second reference voltage lower than the first reference voltage to output a second sensing signal;
 - a controller controlled by an action signal for outputting a first control signal and a second control signal in response to the first sensing signal and the second sensing signal, respectively;
 - a sub-booster for boosting [[a]] the output voltage in response to the first control signal, wherein the sub-booster includes a sub oscillator for outputting a sub oscillating signal in response to the first control signal, and a sub pump circuit for boosting the output voltage in response to the sub oscillating signal;
 - a main booster for boosting [[a]] the output voltage in response to the second control signal, wherein the main booster includes a main oscillator for outputting a main oscillating signal in response to the second control signal, and a main pump circuit for boosting the output voltage in response to the main oscillating signal; and
 - a voltage adder for adding output signals from the sub-booster and the main booster to provide the output voltage.
2. (Original) The voltage generator according to claim 1, wherein the detector comprises:
 - a sensing voltage generator for dividing the output voltage to generate a first sensing voltage and a second sensing voltage lower than the first sensing voltage;
 - a first comparator for comparing the first sensing voltage and the first reference voltage to output the first sensing signal; and
 - a second comparator for comparing the second sensing voltage and the second reference voltage to output the second sensing signal.

3. (Previously Presented) The voltage generator according to claim 1, wherein the controller comprises:

an action detector for combining the first sensing signal and the second sensing signal, and the action signal to generate an output signal;

a latch for latching the output signal from the action detector; and

a sub-controller for receiving an output signal from the latch and the action signal to output the first control signal and the second control signal.

4. (Previously Presented) The voltage generator according to claim 3, wherein the sub-controller comprises:

a plurality of pulse generating blocks, each of which outputs a pulse in response to the action signal and the output signal from the latch; and

a multiplexer for selecting one pulse among a plurality of pulses in response to the action signal to output the one pulse as the first control signal and the second control signal.

5. (Original) The voltage generator according to claim 4, wherein the pulse generating block comprises:

a first operating means for performing a NAND operation on the output signal from the latch and the action signal;

an delay circuit for delaying an output signal from the first operating means for a predetermined time according to the action signal; and

a second operating means for performing a NAND operation on the output signal from the first operating means and an output signal from the delay circuit to provide an output.

6. (Currently amended) The voltage generator according to claim 1, wherein the main booster further comprises[[:]]

~~an oscillator for outputting an oscillating signal in response to the second control signal;~~

a main control driver for decoding the main oscillating signal to output a plurality of main capacitor precharge signals and a plurality of main charge transport signals,[[; and]]

[[a]] wherein the main pump circuit ~~for charging~~ charges capacitors in response to the plurality of main capacitor precharge signals and ~~pumping~~ pumps charges stored in the capacitors in response to the plurality of main charge transport signals ~~to boost~~ the output voltage.

7. (Currently amended) The voltage generator according to claim 1, wherein the sub-booster comprises[[;]]

~~an oscillator for outputting an oscillating signal in response to the second control signal;~~

a sub control driver for decoding the sub oscillating signal to output a plurality of sub capacitor precharge signals and a plurality of sub charge transport signals,[[;and]]

[[a]] wherein the sub pump circuit ~~for charging~~ charges capacitors in response to the plurality of sub capacitor precharge signals and ~~pumping~~ pumps charges stored in the capacitors in response to the plurality of sub charge transport signals ~~to boost the~~ output voltage.

8. (Original) The voltage generator according to claim 1, wherein the detector further compares the output voltage with a third reference voltage greater than the first reference voltage to output a third sensing signal, and

the controller further receives the third sensing signal and the action signal to output a third control signal,

further comprising a second sub-booster for boosting a voltage in response to the third control signal, and wherein the voltage adder adds output signals from the sub-booster, the second sub-booster and the main booster to provide the output voltage.

9. (Currently amended) A voltage generator comprising:

means for comparing an output voltage of the voltage generator with a first reference voltage to output a first sensing signal and comparing the output voltage of the voltage generator with a second reference voltage lower than the first reference voltage to output a second sensing signal;

means controlled by an action signal for outputting a first control signal and a second control signal in response to the first sensing signal and the second sensing signal, respectively;

means for boosting the output voltage in response to the first control signal,
wherein the means for boosting the output voltage in response to the first control signal
includes means for outputting a first oscillating signal in response to the first control
signal and means for boosting the output voltage in response to the first oscillating
signal;

a main booster for boosting the output voltage in response to the second control
signal, wherein the means for boosting the output voltage in response to the second
control signal includes means for outputting a second oscillating signal in response to
the second control signal and means for boosting the output voltage in response to the
second oscillating signal;

~~means for boosting voltage in response to the first control signal;~~
~~means for boosting voltage in response to the second control signal; and~~
means for adding output signals from the sub-booster and the main booster to provide the output voltage.

10. (Original) The voltage generator according to claim 9, wherein the means for comparing further comprises:

means for dividing the output voltage to generate a first sensing voltage and a second sensing voltage lower than the first sensing voltage;

means for comparing the first sensing voltage and the first reference voltage to output the first sensing signal; and

means for comparing the second sensing voltage and the second reference voltage to output the second sensing signal.

11. (Currently amended) The voltage generator according to claim 9, wherein the means for ~~receiving~~ outputting further comprises:

means for combining the first sensing signal, ~~[[and]]~~ the second sensing signal, and the action signal to generate an output signal;

means for latching ~~[[the]]~~ an output signal from the ~~action detector~~ means for combining; and

means for receiving an output signal from the ~~[[latch]]~~ means for latching and the action signal to output the first control signal and the second control signal.

12. (Previously Presented) The voltage generator according to claim 11, wherein the means for receiving an output signal from the latch and the action signal further comprises:

means for generating a plurality of pulses each in response to the action signal and the output signal from the latch; and

means for selecting one pulse among a plurality of pulses in response to the action signal to output the one pulse as the first control signal and the second control signal.

13. (Original) The voltage generator according to claim 12, wherein the means for generating a plurality of pulses further comprises:

first operating means for performing a NAND operation on the output signal from the latch and the action signal to generate an output signal;

means for delaying an output signal from the first operating means for a predetermined time according to the action signal to generate an output signal; and

second operating means for performing a NAND operation on the output signal from the first operating means and the output signal from the means for delaying.

14. (Currently amended) The voltage generator according to claim 9, wherein the means for boosting a voltage in response to the second control signal further comprises:

~~means for outputting an oscillating signal in response to the second control signal;~~

means for decoding the second oscillating signal to output a plurality of second capacitor precharge signals and a plurality of second charge transport signals,~~[[;-and]]~~

wherein the means for boosting the output voltage in response to the second oscillating signal for charging charges capacitors in response to the plurality of second capacitor precharge signals and ~~pumping pumps~~ charges stored in the capacitors in response to the plurality of second charge transport signals ~~to boost the output voltage.~~

15. (Currently amended) The voltage generator according to claim 9, wherein the means for boosting a voltage in response to the first control signal further comprises~~[[;-]]~~

~~means for outputting an oscillating signal in response to the second control signal;~~

means for decoding the first oscillating signal to output a plurality of first capacitor precharge signals and a plurality of first charge transport signals,~~[[;-and]]~~

wherein the means for boosting the output voltage in response to the first oscillating signal for charging charges capacitors in response to the plurality of first capacitor precharge signals and ~~pumping pumps~~ charges stored in the capacitors in response to the plurality of first charge transport signals ~~to boost the output voltage.~~

16. (Currently amended) A method for generating an output voltage with reduced noise, comprising:

receiving an action signal;

~~generating~~ boosting a first voltage signal in response to the action signal and a first oscillating signal when the output voltage is less than a first reference voltage;

generating boosting a second voltage signal in response to the action signal and a second oscillating signal when the output voltage is less than a second reference voltage which is less than the first reference voltage; and

adding the first voltage signal and the second voltage signal to generate the output voltage.

17. (Currently amended) The method for generating an output voltage with reduced noise according to claim 16, further comprising generating boosting a third voltage signal in response to the action signal and a third oscillating signal when the output voltage is less than a third reference voltage which is greater than the first reference voltage,

wherein the step of adding the first voltage signal and the second voltage signal also adds the third voltage signal to generate the output voltage.

18. (Original) The method for generating an output voltage with reduced noise according to claim 16, further comprising:

dividing the output voltage to generate a first sensing voltage and a second sensing voltage lower than the first sensing voltage;

comparing the first sensing voltage and the first reference voltage and generate the first sensing signal in response thereto; and

comparing the second sensing voltage and the second reference voltage and generating the second sensing signal in response thereto.

19. (Currently amended) A voltage generator comprising:

a first voltage sub-booster configured to provide a first voltage signal when an output voltage is less than a first reference voltage, wherein the first voltage sub-booster includes a first sub oscillator for outputting a first sub oscillating signal and a sub pump for boosting the first voltage signal in response to the first oscillating signal;

a main voltage booster configured to provide a second voltage signal when the output voltage is less than a second reference voltage that is less than the first

reference voltage, wherein the main voltage booster includes a main oscillator for outputting a main oscillating signal and a main pump circuit for boosting the second voltage signal in response to the main oscillating signal; and

a voltage adder configured to add the first voltage signal and the second voltage signal to provide the output voltage.

20. (Currently amended) The voltage generator according to claim 19, further comprising a second voltage sub-booster configured to provide a third voltage signal when the output voltage is less than a third reference voltage which is greater than the first reference voltage, wherein the second voltage sub-booster includes a second sub oscillator for outputting a second sub oscillating signal and a second sub pump for boosting the third voltage signal in response to the first oscillating signal, and wherein the voltage adder is configured to add the first voltage signal, the second voltage signal and the third voltage signal to provide the output voltage.